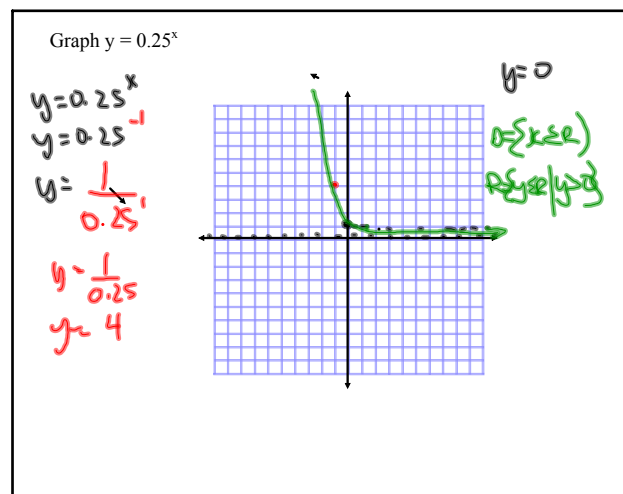
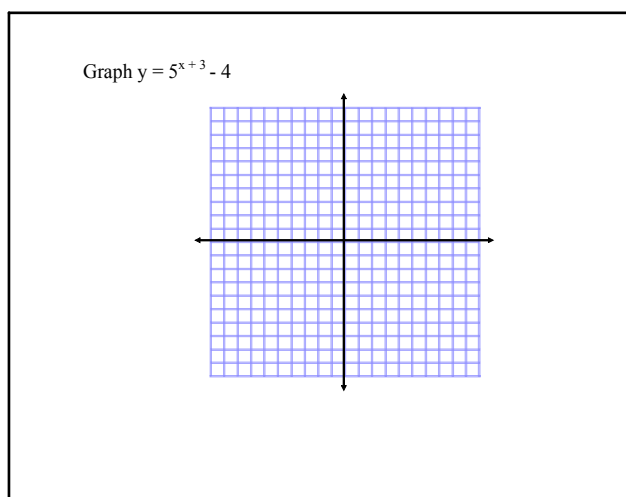


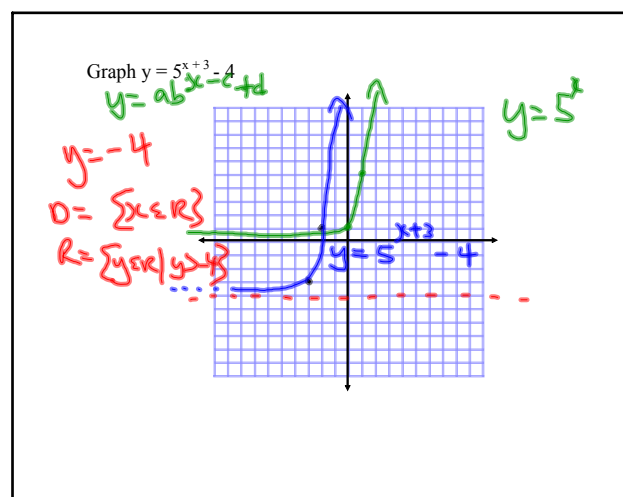
May 5-9:21 AM



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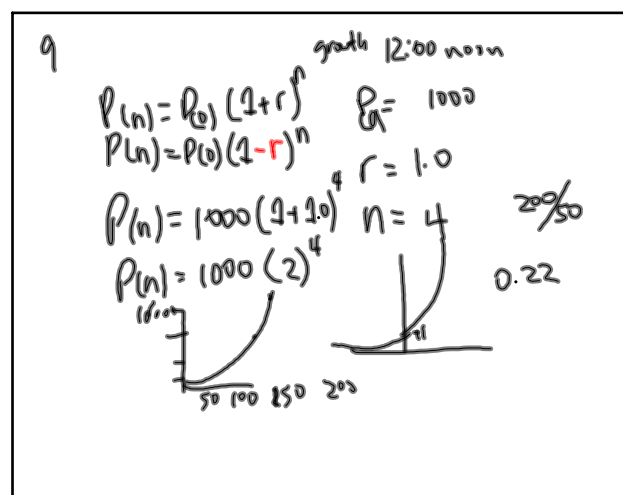
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May 5-9:21 AM

9. A biologist measures 1000 yeast cells in a culture at 12:00 noon. She predicts that, under current conditions, the culture should double every 50 min.
- Sketch a graph of the population of this culture for 200 min after noon.
 - Use your graph to determine the population of the culture in 2.5 h.
 - How can you adapt the graph to determine what the population of cells was 3 h before noon?

Dec 8-1:29 PM



May 6-11:01 AM

14. Jerry invests \$500 in a bond that pays 5% per year. He will need the money for college in 3 years.

- a) Write an equation that models the growth of the money.
- b) Use the equation to determine how much Jerry will have at the end of 3 years.
- c) How much money did his \$500 earn in the 3 years?
- d) Jerry thinks that if he keeps his money invested for twice as long (6 years), he will earn twice as much. Is this true? Explain your reasoning.

Dec 8-1:29 PM

May 6-11:14 AM

1. Evaluate without using a calculator.

- a) 5^{-3}
- b) $(\frac{3}{4})^{-2}$
- c) 8^0
- d) $16^{-0.5}$
- e) -7^0
- f) $(\frac{1}{10})^{-3}$

2. Write as a single power. Express answers with a positive exponent.

- a) $(6)^{-3} \times (6)^{\frac{5}{2}}$
- b) $4(\frac{1}{4})^{-4}$
- c) $\frac{10}{10^{-4}}$
- d) $\frac{7^8}{(7^2)^3}$
- e) $a^7(a^6)^{-2}$
- f) $\frac{b^3(b^{-2})}{b^4}$

3. Write $\sqrt[3]{4^3}$ in exponent form, then evaluate.

Handwritten work shows various calculations and simplifications for these problems, including $5^{-3} = \frac{1}{125}$, $(\frac{3}{4})^{-2} = (\frac{4}{3})^2 = \frac{16}{9}$, $8^0 = 1$, $16^{-0.5} = \frac{1}{\sqrt{16}} = \frac{1}{4}$, $-7^0 = -1$, $(\frac{1}{10})^{-3} = 10^3$, $(6)^{-3} \times (6)^{\frac{5}{2}} = 6^{-\frac{1}{2}} = \frac{1}{\sqrt{6}}$, $4(\frac{1}{4})^{-4} = 4 \times 4^4 = 4^5$, $\frac{10}{10^{-4}} = 10^5$, $\frac{7^8}{(7^2)^3} = \frac{7^8}{7^6} = 7^2$, $a^7(a^6)^{-2} = a^7a^{-12} = a^{-5} = \frac{1}{a^5}$, $\frac{b^3(b^{-2})}{b^4} = \frac{b^1}{b^4} = b^{-3} = \frac{1}{b^3}$, and $\sqrt[3]{4^3} = 4$.

Dec 8-1:27 PM

b) $(\frac{3}{4})^{-2}$ d) $16^{-0.75}$ f) $100^{-\frac{3}{2}}$

2. Write as a single power. Express answers with a positive exponent.

- a) $(6)^{-\frac{1}{3}} \times (6)^{\frac{5}{6}}$
- b) $4(\frac{1}{4})^{-4}$
- c) $\frac{10}{10^{-4}}$
- d) $\frac{7^8}{(7^2)^3}$
- e) $a^7(a^6)^{-2}$
- f) $\frac{b^3(b^{-2})}{b^4}$

3. Write $\sqrt[3]{4^3}$ in exponent form, then evaluate.

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7. The population of a small town has increased at a rate of 1.5% per year since 1980. The town had a population of 1600 that year.

- a) Write the equation that models the growth in population of the town. Describe each part of your equation.
- b) Use your equation to determine the population of the town in 2008.

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